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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,944	12/31/2001	Jung-Im Kim	P67496US0	5264

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EXAMINER
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TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/029,944

**Applicant(s)**

KIM ET AL.

**Examiner**

Joseph D. Torres

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-14 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 31 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08).  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413).  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 03/28/2005 have been fully considered but they are not persuasive.

The Applicant contends, "Claim 1 recites a turbo code encoder that includes a first convolutional encoder that generates  $N$  systematic bits and  $N$  first parity bits and a second convolutional encoder that generates  $N$  second parity bits. The  $3N$  total bits are then input into a repeater which repeatedly outputs predefined bits among the  $3N$  total bits. In contrast, Tong teaches that data bits have a redundancy because of the FEC encoding 22 (i.e., the turbo encoders 92) and are punctured to achieve a desired rate matching. Therefore, Tong teaches that the puncture 95 deletes certain received bits to remove redundancy before the selector 97 and repetition function 96 are provided. In this manner, Tong teaches that less than the total number of bits  $P1$  and  $P2$  are input into the repetition function 96. Accordingly, Tong fails to teach or suggest that  $3N$  total bits are input into a repeater which repeatedly outputs predefined bits among the  $3N$  total bits, as recited in claim 1".

The Examiner disagrees and asserts that col. 10, lines 55-59 in Tong teach that puncturing is applied only as required, that is, Puncturer 95 in Figure 5 of Tong is entirely adaptive. Since the Puncturer 95 in Figure 5 is entirely adaptive it is capable of operating with no puncturing as a device for passing parity bits to selector 97 without

modification, hence the circuit in Figure 5 is inherently capable of passing all of the 3N bits to Selector 97 without modification (see See, e.g., In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971)). Furthermore, col. 5, lines 59-64 in Tong teach that Figure 5 is designed to reduce complexity of rate matching circuitry for implementing the rate-matching algorithm of Figure 2 by strategic placement of rate matching circuitry such as Puncturer 95 and repetition encoder 96. Figure 2 in Tong explicitly teaches that when  $y < 0$ , no puncturing is applied.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-5 and 10-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the 3N total bits" in line 8. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the 3N total bits" in line 8. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-14 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-14 recite purely abstract algorithmic steps that can be carried out by hand or in computer software. Computer programs are non-statutory. Abstract algorithms are non-statutory.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4-6, 8, 10, 11, 13 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Tong; Wen et al. (US 6744744 B1, hereafter referred to as Tong).

35 U.S.C. 102(e) rejection of claims 1, 6 and 10.

Tong teaches a turbo code encoder (Figure 5 in Tong teaches a turbo code encoder) comprising: a first convolutional encoder for receiving bits to be encoded (Encoder 1 in Figure 5 of Tong is a first convolutional encoder for receiving bits to be encoded), generating a systematic bit and a first parity bit, and outputting them (Encoder 1 in Figure 5 of Tong generates a systematic bit S and a first parity bit P1 and outputs them

to channel interleavers); an interleaver for receiving the bits to be encoded, in parallel with the first convolutional encoder, and interleaving the received bits (Interleaver 91 in Figure 5 of Tong is an interleaver for receiving the bits to be encoded, in parallel with the first convolutional Encoder 1 in Figure 5, and interleaving the received bits); a second convolutional encoder for receiving the interleaved bits from the interleaver and generating a second parity bit (Encoder 2 in Figure 5 of Tong is a second convolutional encoder for receiving the interleaved bits from Interleaver 91 and generating a second parity bit P2); and a repeater for repeatedly outputting predefined bits among the bits output from the first and second convolution encoders (Repetition Encoder 96 in Figure 5 of Tong is a repeater for repeatedly outputting predefined bits among the bits output from the first and second convolution Encoders 1 and 2 in Figure 5).

Note: col. 10, lines 55-59 in Tong teach that puncturing is applied only as required, that is, Puncturer 95 in Figure 5 of Tong is entirely adaptive. Since the Puncturer 95 in Figure 5 is entirely adaptive it is capable of operating with no puncturing as a device for passing parity bits to selector 97 without modification, hence the circuit in Figure 5 is inherently capable of passing all of the  $3N$  bits to Selector 97 without modification (see See, e.g., *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997) and *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971)). Furthermore, col. 5, lines 59-64 in Tong teach that Figure 5 is designed to reduce complexity of rate matching circuitry for implementing the rate-matching algorithm of Figure 2 by strategic placement of rate matching circuitry such as Puncturer

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95 and repetition encoder 96. Figure 2 in Tong explicitly teaches that when  $y < 0$ , no puncturing is applied.

35 U.S.C. 102(e) rejection of claims 2, 4, 5, 8, 11, 13 and 14.

Col. 10, lines 44-51 and Figure 5 in Tong teach that the Repetition Encoder 96 in Figure 5 can selectively repeat systematic bits and/or parity bits.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 3, 7, 9 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Tong; Wen et al. (US 6744744 B1, hereafter referred to as Tong).

35 U.S.C. 103(a) rejection of claims 3, 7, 9 and 12.

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Tong substantially teaches the claimed invention described in claims 1, 2, 4-6 and 8 (as rejected above).

However Tong does not explicitly teach the specific use of particular puncturing or repetition patterns.

The Examiner asserts that Tong teaches a means for selectively puncturing or repeating turbo coded bits, which encompasses any particular embodiment of the teachings in the Tong patent for creating a particular puncturing or repetition patterns. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tong by including use of particular puncturing or repetition patterns. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of particular puncturing or repetition patterns would have provided the opportunity to ensure a properly rate matched turbo code.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**JOSEPH TORRES**  
**PRIMARY EXAMINER**

Joseph D. Torres, PhD  
Primary Examiner  
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